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THE COMING BATTLE IN SEMICONDUCTORS

JAPAN TAKES ON THE U.S., AGAIN

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Forbes

November 26, 1979
Volume 124, Number 11

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Far from being rational and efficient, the stock market is nearly always wrong, says this writer. Which makes the market a sitting duck for the courageous—and disciplined—contrarian.

Why the experts are nearly always wrong

The stock market is like a computer. Its input is the knowledge, the calculation, the hopes, the fears, the dreams and the avarice of millions of investors. Its output is appropriate prices on a whole universe of securities. But you know what they say about computers—garbage in, garbage out.

David Dreman is a highly respected Wall Street professional and author who is currently heading his own New York-based investment firm. He has just written a book that goes a long way toward explaining why most investors, professionals included, generally do so poorly in the stock market. Entitled *Contrarian Investment Strategy* (to be published in February by Random House), this book seems destined to join the mere handful of stock market classics. Dreman is not content to say that the experts are nearly always wrong. He goes further. He explains why, given the prevailing methods of stock selection, it is almost inevitable that they should be wrong.

The computer, in short, is okay but the input isn't. Garbage in, garbage out.

By playing against the experts, Dreman believes, an investor can achieve superior results. How does one do that? Simple. The stocks the professionals like generally command a superior price/earnings ratio; the stocks they shun have lower price/earnings ratios. This is perfectly logical. People are willing to pay more for stocks they like than for stocks they don't like. So, the smart contrarian will be against the experts by confining his purchases to stocks bearing the lowest price/earnings ratios.

This chapter from Dreman's engrossing book draws both on psychology and stock market experience to explain *why* the experts are always wrong—why they are the true odd-lotters. Following is a list of "contrarian" stocks generated by a computer programmed to search out stocks that meet Dreman's low P/E criteria. The list reflects the mechanical approach he advocates and makes for interesting reading.

By David Dreman

ALMOST ALL OF US have learned in our school days of classic miscalculations experts have sometimes made. Lord Cardigan hardly demonstrated the benefit of an extensive military background when he led the Light Brigade, well-bedecked with blue ribbons for beautiful horseflesh, steeplechasing and musical riding, into the barrels of 300 Russian cannon at Balaklava. Nor was Yale economist Irving Fisher's comment, "Stocks are now at what looks like a permanently high plateau," uttered a few days before Black Tuesday 1929, the brightest financial statement of the century. The same might be said for the political judgment of Neville Chamberlain, at Croydon Airport upon his return from Munich, waving a document and shouting, "I bring you peace in our time."

The illusion of expert invincibility is one that most of us put behind us long ago. What has not been discovered until recently is that under certain conditions, *experts err predictably and often*. There is a consistency to the mistakes made by professionals in fields as diverse as psychology, engineering and publishing. And, as we shall see, the conditions for such errors are as fertile in the stock market as anywhere.

The problem of expert failure can be traced to man's capabilities as an information processor. Just how much information he can handle effectively under varying circumstances has come under intense scrutiny in recent decades, and some of the results are striking. We will see that the vast storehouses of

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data about companies, industries and the economy that current methods require the investor to comprehend may not always give him or her an extra "edge." In fact, ingesting large amounts of investment information can lead to making worse rather than better decisions. Impossible? At the end of the chapter, you'll see that the favorite stocks and industries of large groups of professional investors, chosen by exactly the methods we are questioning, fared far more poorly than the averages over an almost 50-year period.

To outdo the market then, we must first have a good idea of the forces that time and again victimize even the pros. Once these forces are understood, the investor can build defenses and find routes that skirt the pitfalls.

Just how good is man as a processor of information, and where does he run into trouble? Nobel Laureate Herbert Simon, one of the pioneers and leaders in the field, has studied both questions intensely over more than four decades. According to Simon, "Every human organism lives in an environment which generates millions of new bits of information every second, but the bottleneck of the perceptual apparatus certainly does not admit more than 1,000 bits per second, and possibly much less." We react consciously to only a minute portion of the information that is thrown at us. But Simon states that even the filtering process is not a passive activity which provides a pretty reasonable representation of the real world, but "an active process involving attention to a very small part of the whole and the exclusion from the outset of all that is not within the scope of our attention."

Simon adds: "The capacity of the human mind for formulating and solving complex problems is very small compared with the size of the problems whose solution is required."

Researchers in many fields began to ponder whether such cognitive limitations actually existed and, if they did, how they might affect the decision-making process in their own disciplines. Could they, as Simon may suggest, result in a serious curtailment of the professional to carry out his responsibilities effectively in a complex field?

Some of the first experiments in cognitive limitation were conducted in the field of clinical psychology, which, like psychiatry, requires the practitioner to make complex diagnostic decisions if proper treatment is to be administered. One of the pioneer investigators was Paul Meehl. In the late 1940s and early 1950s, Meehl made 20 separate surveys of groups of clinical psychologists who, after thorough examinations, recommended treatment for psychotic and schizophrenic patients. The groups of psychologists made predictions of how they believed the patients would respond to the particular treatment prescribed. These predictions were then compared with the average recovery rates based simply on the standard treatments in the past. Meehl expected the psychologists' diagnoses would undoubtedly improve the prescribed treatment and result in higher recovery rates. The past averages based on standard treatment would be the floor from which the effectiveness of the diagnoses could be gauged. But, in the words of one researcher, "This floor turned out to be the ceiling." The predictions of the clinicians were inferior to the simple averages in 18 out of 20 studies and as good only twice!

Further studies showed no correlation between the amount of training and experience a clinical psychologist may have and his or her accuracy. Surprisingly, one indicated that psychologists were no better at interpersonal judgments than individuals with no training, and sometimes worse.

Do such findings extend beyond the couch? Apparently so. A group of radiologists reading X-ray films failed to diagnose lung disease 30% of the time, although the symptoms were clear.

Dozens of such studies have made it clear that expert failure extends far beyond the investment scene. And the problems often reside in man's information-processing capabilities. Current work indicates he is a serial or sequential processor of data who can handle information in a linear manner; that is, he can move from one point to the next in a logical sequence. In building a model ship or a space station, there is a defined sequence of procedures. Each step, no matter how complex the particular technology, is linked to the preceding step and will be linked to the succeeding stage until completion.

However, the type of problem that proved so difficult to the professionals we just examined was quite different; here configural, or interactive, rather than linear, reasoning was required for the solution. In a configural problem, the decision maker's interpretation of any single piece of information changes depending on how he evaluates many other inputs. Take the case of the security analyst: Where two companies have the same trend of earnings, the emphasis placed on growth rates will be weighed quite differently depending on their respective industries and their financial strength. In addition, the assessment will be tempered by the dividend trend, the current payout ratio, profit margins, returns on capital and the host of analytical criteria we looked at previously. The evaluation will also vary with changes in the state of the economy, the level of interest rates and changes in the companies' competitive environment. Thus, a successful investor must be adept at configural processing, integrating many diverse factors, since changes in any may require a revision of the total assessment.

Not unlike juggling, each factor weighed is another ball in the air, increasing the difficulty of the process. How good, then, are professionals, both within and outside the investment field, at conducting this type of reasoning?

Curious about what results would be found in the stock market, Paul Slovic, a respected researcher in this area, devised a test to see how important configural (or interactive) reasoning actually was in the decisions of market professionals. In one study 13 stockbrokers and 5 graduate students in finance were given 8 important financial inputs (trend of earnings per share, profit margins, outlook for near-term profits, etc.) that they considered significant in analyzing companies. The optimum solution could only be found in a configural manner. As it turned out, configural reasoning, on average, accounted for only about 4% of the decisions made—results roughly equivalent to those of the radiologists and psychologists.

Moreover, the emphasis the brokers initially said they put on various inputs varied significantly from what they actually used in the experiment. For example, someone considering the trend of earnings per share over time most important might actually place greater emphasis on near-term prospects. Finally, the more experienced the brokers, the less accurate the assessment of their own scales of weighting appeared to be. The evidence indicates that most people are low-level configural processors, in or out of the marketplace.

In light of what we have just seen, we might ask how dependable current investment methods actually are. To answer this question, let's look more thoroughly at the manner in which a company is evaluated by fundamental analysis. Suppose, for example, an analyst decides to examine Aetna Life & Casualty. How will he go about it?

Examining the company's financial statements, one sees it as a gigantic operation. In 1977 it had revenues of $8.1 billion, $408 million in net income after taxes, 30,700 home office employees and 24,000 agents. It writes group insurance for one out of ten workers in the country, automobile insurance for 4.8 million drivers as well as homeowner's insurance for 1.4 million dwellings. But these are only openers: It also writes 27 other major property and casualty insurance lines, many dozens of different policies in life, health and pension areas, and it is engaged in several other, nonrelated ventures as well.

Since it is generally accepted that the most important determinant of value is an assessment of the company's earnings power, the analyst will probably start here. To do his job properly, he'll have to look at many dozens and possibly hundreds of inputs.

In the case of Aetna, he normally will review in some detail the recent history and prospects of each of its major lines. If he

is the thorough type—and most of the dying species of institutional analysts are—he will go further, possibly getting breakdowns from management on how each of these lines is faring in important states. But much of the information he is able to ferret out has a high degree of uncertainty attached to it.

Facts provided to him by management as the basis for his various estimates are partial or incomplete at best and sometimes prove to be entirely incorrect. Varying amounts of information are normally available about individual lines. Obviously, no company will relate all the necessary profit and loss and claim experience data to an outsider.

The analyst may be told that the automotive property line is "up nicely" or that automobile liability is "so-so." If he asks how one should translate a "so-so" or "up nicely" into a reasonable earnings estimate, more times than not he'll be met with a shrug and told it's corporate policy not to divulge the information, and once in a while he'll be told, "That's your problem."

In any case, the analyst is left on his own. He must rely on personal judgment, deciding whether "nicely" means up 10% or 30%, or "so-so" means flat or down sharply. Checks can be made with trade sources and the competition, but the information provided will also be qualitative and sometimes misleading. Thus the analyst's judgment is extremely important at every stage of the assessment.

In analyzing an insurance company, it is also important to evaluate the appropriateness of the current rate structure. Because of competition and rising inflation, there is a large element of doubt about how good rates actually are. Even company officers can often be wrong in their assessments. In the 1973-74 period, for example, the insurance industry badly misjudged the consequences of rising inflation in its property-casualty business and did not increase rates sufficiently, taking enormous losses as a consequence. Yet, at the time, most managements believed their rate structures were sound.

Forecasting the earnings of a large industrial company is not much easier. Often operating in hundreds of different markets, many of which produce intermediate products, sometimes in up to 100 separate countries, the analyst is bombarded with difficult-to-quantify information on competitive conditions, capacity utilization rates and pricing. What will be the effect on Ford of a new compact introduced by GM or a sports car by Volkswagen? How badly will DuPont polyester operations be hurt if Celanese cuts prices on one or two grades of polyester tire cord? All pertinent information must be synthesized and evaluated in order to arrive at the earnings estimate.

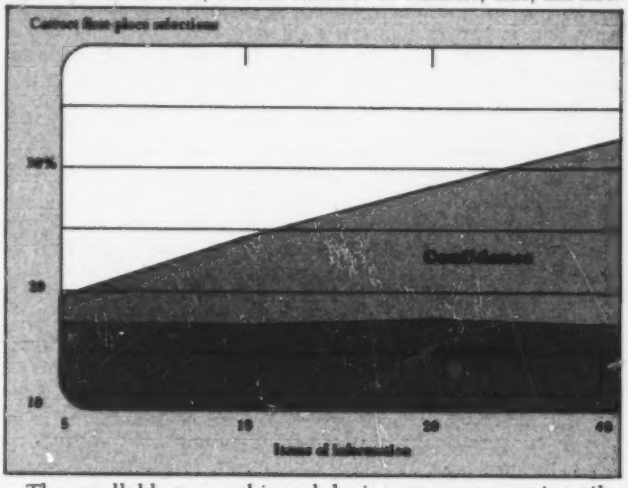
Earnings forecasting then depends on large numbers of assumptions, many of which are rapidly changing and very hard to quantify, which means their accuracy is always in doubt.

In addition to the forecasting problems, the harried analyst must also assess the quality of management, the company's expansion plans, its finances, the probable dividend rate, the quality of its accounting and dozens of other vital factors. And all estimates are contingent on general economic conditions, which means correctly gauging the level of interest rates, unemployment, inflation, industrial production, capital spending and other important variables. Economists themselves are as often wrong as they are right in these estimates.

Finally, even if the analyst could surmount all of these obstacles, he would still need to know as much about other companies in order to determine whether the company he chose represented the best value. Ideally, the professional needs to have information-processing capabilities not unlike those of a large-scale computer. He must have a central storage file for massive amounts of information of a political, economic, industry, market and company nature; he must update and cross-reference it as numerous new and sometimes contradictory developments occur. The Bionic Man might be capable of as much, but work in the behavioral sciences pretty clearly indicates that most human beings are not.

But the requirements of the theory do not end here. One also needs a very high level of configural or interactive reasoning in order to apply different weights to the scores of factors upon which the analysis is contingent. And we've already seen that man is simply not a good configural processor of information. The reach of conventional investment theory may very well exceed the grasp of many of us to use it properly. Under conditions of complexity and uncertainty, experts demand as much information as possible to assist them in decision making. But as I've indicated, that extra "edge" may not help. A large number of studies have shown pretty conclusively that increasing the amount of information available to an expert decision maker doesn't do much to improve his judgment.

In one experiment, eight veterans of the racing forms were progressively given 5 to 40 pieces of information they considered most important in picking winners. As the following chart shows, the degree of confidence rose directly with the level of information, but the number of winners, alas, did not.



The parallel between this and the investment scene is striking. Wall Streeters place immense faith in the detailed analysis of its experts. In-depth research houses turn out thousands upon thousands of reports, sometimes running up to a hundred pages or more and sprinkled with dozens of tables and charts. Washington listening posts have been set up to catch the slightest indications of impending changes in government policies affecting companies or industries, and scores of conferences are called to provide the money manager with penetrating understanding in dozens of important areas.

The more detailed his level of knowledge, the more effective the expert is considered. A few years back, for example, a leading investment magazine related the story of an analyst so knowledgeable about Clorox that "he could recite bleach share by brand in every small town in the Southwest and tell you the production levels of Clorox' line number 2, plant number 3. But somehow, when the company began to develop massive problems, he missed the signs." As in the case of the psychologists and the experts of the racing sheets, the amount of information available had little to do with the outcome. The stock fell from a high of 53 to 11.

This outcome is unfortunately no exception. To quote a disillusioned money manager several years back: "You pick the top [research] house on The Street and the second top house on The Street—they all built tremendous reputations, research-in-depth, but they killed their clients." Perhaps *in-depth information does not mean in-depth profits.*

I hope it is becoming apparent that these configural relationships are extremely complex. Investors are not dealing with 24 or 57 relevant interactions, but with an exponential number. We have already seen how experts working with far fewer inputs have proven remarkably inadequate at interactive judgments. Because these psychological findings are largely unknown on Wall Street, investment experts continue to be

convinced that their major problems could have been handled if only those extra few necessary facts had been available. They thus tend to overload themselves with information, which usually does not improve their decisions but only makes them more confident and more vulnerable to serious errors.

A famous market theorist of another era, Garfield Drew, saw the end result of this problem clearly. In 1941 he wrote: "In fact, simplicity or singleness of approach is a greatly underestimated factor of market success. As soon as the attempt is made to watch a multiplicity of factors even though each has some element to justify it, one is only too likely to become lost in a maze of contradictory implications . . . the various factors involved may be so conflicting that the conclusion finally drawn is no better than a snap judgment would have been."

Under conditions of anxiety and uncertainty with a vast interacting information grid, the market can become a giant Rorschach test, allowing the investor to see any pattern he wishes. In fact, recent research in configural processing has shown that experts can not only analyze information incorrectly, they can also find relationships that aren't there—a phenomenon called "illusionary correlation."

The complexity of the marketplace naturally leads to an attempt to simplify and rationalize what seems to be unfathomable reality. Often investors notice things that are simply coincidental, and then come to believe that correlations exist when none are actually present. And if they are rewarded by the stock going up, the practice is further ingrained. The market thus provides an excellent field for illusionary correlation. The head-and-shoulders formation on a chart cuts through thousands of disparate facts that the chartist believes no man can analyze. Buying growth stocks simplifies an otherwise bewildering range of investment alternatives, just as the Kondratieff wave occurring every 50 years clarifies economic activity which might otherwise appear to defy analysis. Such patterns, which seemed to have worked in the past, are pervasive in the marketplace. The problem is that some of the correlations are illusionary and others are chance. Trusting in them begets a high risk of error. A chartist may have summed it up appropriately: "If I hadn't made money some of the time, I would have acquired market wisdom quicker."

Now, unquestionably, there are people with outstanding gifts for abstract reasoning that permit them to cut through enormously complex situations. Every field will have its Bernard Baruchs or Warren Buffetts, its Bobby Fischers or Anatoly Karpovs. But these people are decidedly few. In chess, for example, there is only one Grand Master for every few hundred thousand or so players. And even Masters or Experts, while more plentiful, still represent only a fraction of those who pursue the game regularly. It seems, then, that, as in chess, the information-processing capabilities and the standards of abstract reasoning required by current investment methods are too complicated for the majority of us, professional and amateur alike, to use to beat the market regularly.

At this point, some of you might ask whether the problems in decision making, particularly in the stock market, are not being exaggerated. The answer, I think, can be found by looking at the favorite investments of market professionals over time.

What is the record? Let's start with a large international conference of institutional investors held at the New York Hilton in February 1970. Over 2,000 strong, the delegates were polled for the stock they thought would show outstanding appreciation that year. The favorite choice was National Student Marketing—the highest-octane performer of the day. From a price of 120 in February, it dropped 95% by July of that same year. At the same conference in 1972, the airlines were selected as the industry expected to perform best for the balance of the year. Within 1% of their highs, the carrier stocks fell 50% that year in the face of a sharply rising market. The conference the following year voted them a group to avoid.

Are these simply chance results? In my earlier book, *Psychology and the Stock Market*, I included seven surveys of how the favorite stocks of groups of large numbers of professional investors had subsequently fared. In all the surveys, the choices of the professionals did worse than the market averages. And this before adding on commission charges and advisory fees.

As I indicated at the time, these were the only samples I had been able to locate. Since publication, with further digging and an excellent research associate—Ms. Nan Miller—as well as some luck, we have unearthed a large number of additional samples—some 51 encompass investment advice given over the almost 50-year period between 1928 and 1976. The surveys show the favorite stock or portfolio of groups of professional investors. The number of professionals participating ranged from 25 at the low end to as high as several thousand. The median was well over 100. Wherever possible, the subsequent performance of the professional choices was measured against the S&P's 500 for the next twelve months.

The results are presented in the table below. The first column shows the time period for each set of surveys, the second the source of the survey, the third the total number of surveys conducted and the final column the percentage of each set of surveys that outperformed the market in the next 12 months.

Expert forecasts of favorite stocks and industries

Time span	Source of surveys	Total surveys	% outperforming market in next year*
1929-32	Cowles Surveys	3	0%
1953-76	*Trusts and Estates*	21	33
1967-69	*Financial Analysts Journal*	1	0
1967-72	*California Business*	7	29
1969-73	*Institutional Investor*	7	0
1973	*Business Week*	2	50
1974	*Seminar* (Edson Gould)	2	0
1974	Callan Associates	4	0
1974-76	Mueller Surveys	4	25
Total number of surveys		51	
Percentage of professional surveys *underperforming* market			77

*Several studies utilized differing time periods and market averages in the comparisons. Note: Dividends excluded in all comparisons.

The findings startled me. While I believed the evidence clearly showed that experts make many mistakes, I did not think the magnitude of error was as striking or as consistent as the results make evident.

Seventeen of the studies measure the performance of five or more stocks the experts picked as their favorites. By diversifying into a number of stocks instead of just choosing one or two, the element of chance is reduced. And yet, the 17 portfolios so chosen underperformed the market on 15 occasions! This meant, in effect, that when you receive professional advice about stocks to buy, you would be given bad advice nine out of ten times. Throwing darts at the stock pages blindfolded or flipping a coin to decide what to buy would give you a 50-50 chance. Using a financial professional shortened your odds considerably.

The other 34 samples did not do appreciably better. Overall, the favorite stocks and industries of large groups of money managers and analysts did worse than the market on 39 of 51 occasions—or 77% of the time—as the table shows.

One of the first studies was done by Alfred Cowles, among the earliest systematic students of markets, who made three separate studies measuring the forecasting record of investment advisers, large insurance companies, brokers and bankers between 1928 and 1932. All underperformed the market.

Another important survey is based on polls conducted by *Trusts and Estates* over a 21-year period. Each year a large number of investment officers with bank trust departments (as a group, the largest institutional common-stock investors)

were asked to name their three favorite industries for the next year. The "Trusts and estates" table gives the results for the 1953-76 period. The favorite industry of most bank portfolio managers did worse than the market in 14 of the 21 years, or 67% of the time. It's also interesting, since there are dozens of industries to choose from, that one industry—office equipment—was favored so often.

Trusts and estates

Subsequent 12-month performance of favorite industry

Year	Favorite industry	Performance over the next 12 months: Industry	S&P's 500
1953*	Electric & gas public utilities	1.0%	–6.6%
1957	Oil	–16.0	–14.3
1958	Electronics and electric utilities	75.0	38.1
1959	Oil	–9.7	8.5
1960	Auto and accessories	–26.6	–3.0
1961	Office equipment and machine group	31.0	23.1
1962	Chemicals, office equipment, banks	–17.1	–11.8
1963	Electric utilities	6.9	18.9
1964	Chemicals	15.6	13.0
1965	Chemicals	4.3	9.1
1966	Oil	–10.6	–13.0
1967	Utilities	4.7	20.1
1968	Office equipment	–0.9	7.7
1969	Office equipment	15.6	–11.4
1970	Office equipment	–17.5	0.1
1971	Building materials	5.5	10.8
1972	Retail	11.7	15.7
1973	Office equipment	–21.5	–17.4
1974	Office equipment	–37.0	–29.7
1975	Office equipment	27.7	31.5
1976	Oil	29.0	19.1
	Percentage underperforming market	67	

*No surveys conducted in 1954, 1955 and 1956.

Moving on to more recent times, a number of broad surveys have been conducted by *Institutional Investor*, a magazine widely read by the professionals. In late 1971, for example, the magazine polled more than 150 money managers in 27 states, each of whom chose the five stocks he or she believed would show the best performance the following year. Different types of money managers were surveyed, ranging from the people who ran hair-trigger performance funds to conservative bank and insurance types. The magazine indicated that although 400 stocks were selected overall, there was a remarkable consensus regarding the top 10 favorites, which were weighted toward concepts popular at the time.

The top ten fizzled in a rising market, gaining only 1.3% in 1972, a year the S&P's averages rose 15.6%. For the two-year period, the favorites declined almost eight times as much as the averages. After the top ten that year, 50 runners-up were named. They did even more poorly, declining an average of 5% in 1972 and ten times as much as the market in the 1972-73 period.

Another survey was conducted the next year, 1973. It was a down year for the market and Standard & Poor's dropped 17.4%, hardly a ripple compared with the average decline of 40.4% for the top ten *(see table)*. After the top ten, 27 other stocks were also selected for performance that year, and again they did worse than the average. The surveys were discontinued after 1973.

A final survey conducted by Callan Associates, a West Coast consulting firm, is worth noting *(see table)*. Three dozen investment managers were asked at the end of 1974 to pick both their favorite six stocks and favorite industry and at the same time the six stocks and single industry they thought would do worst in the following year; there were some rather extraordinary results. The "worst" stocks and single industry did better than the S&P's, while the "best" did worse.

The 1973 top ten

Company	Price 1/1/73	Price 12/31/73	% change	Price 12/31/74	% change from 1/1/73
IBM	321⅜	246¼	–23.3%	168	–47.8%
Polaroid	126⅛	69⅞	–44.6	18⅝	–85.2
ITT	60¼	26⅜	–56.2	14¾	–75.5
Teleprompter	33¼	3⅞	–88.3	1½	–95.5
Eastman Kodak	148⅜	116	–21.8	62⅞	–57.6
Gillette	63⅞	35⅞	–43.8	25⅜	–60.3
McDonald's	76¼	57	–25.2	29⅜	–61.5
Motorola	65½	49¼	–24.8	34⅛	–47.9
Digital Equipment	91¼	101⅞	+11.0	50¼	–44.7
Levitz Furniture	26⅞	3⅝	–86.5	1¼	–93.5
Average change			–40.4		–67.0
S&P's 500 (without dividends)	118.1	97.6	–17.4	68.6	–41.9

Note: All companies adjusted for stock splits.

Callan Associates survey (12/31/74)

	Performance over the next 12 months
Six-stock portfolio to buy	+20.7%
Favorite industry—drugs	+ 2.8%
Worst six stocks	+42.9%
Worst industry—electrical and electronics	+42.0%
S&P's 500	+31.5%

More recently, professionals have been reluctant to participate in such polls. When asked to name his favorites, one analyst replied tersely: "We don't make this information available free anymore."

What do we make of results such as these? The number of samples seems far too large for the outcome to be simply chance. In fact, the evidence indicates a surprisingly high level of error among professionals in choosing both individual stocks and portfolios over a period spanning almost 50 years.

Such evidence, in the first place, is incompatible with the central assumption of the efficient market hypothesis.* But far more important are the practical implications of what we have just seen: the discovery of a very plausible explanation of why fundamental methods often do not work. The theory demands just too much from man as a configural reasoner and information processor. Both within and outside of markets, under conditions of information overload our mental tachometers appear to surge far above the red line. When this happens, we no longer process information reliably. Confidence rises as our input of information increases, but our decisions are not improved. And from the evidence we've seen in the stock market at least, they appear to deteriorate.

While it is true that experts may do as poorly in other complex circumstances, the market professional unfortunately works in a goldfish bowl. In no other calling that I am aware of is the outcome of decisions so easily measurable.

The high failure rate among financial professionals, at times approaching 90%, indicates not only that errors are made but that, under certain complex conditions, there are systematic and predictable forces working against the unwary investor to account for such extraordinarily poor results. ■

** The hypothesis states that it is impossible to beat the market because of the competition between professionals, which results in prices always being about where they should be. But just as the theory holds that even professionals cannot outdo the market over time, it also holds that they cannot do substantially worse. After all, it is their very decision making that keeps prices at their proper level in the first place. The surveys, however, give us a different picture from the one assumed by the theorists. The massive underperformance in both up and down markets indicates that their most crucial assumption is inconsistent with a statistically significant body of evidence. Findings such as these appear to indicate that the hypothesis is built of straw.*

How can you profit from the fact that the experts are wrong more often than right? By buying the stocks they don't like, says David Dreman, and he names 123 of them for us.

How to play against the experts and win

Statistical Spotlight

IN HIS FASCINATING NEW BOOK, David Dreman explains why the professionals are usually wrong about the stock market *(see p. 117)*. One reason: Human beings are simply unfitted to process all the information necessary to reach a reliable judgment on the future of a company or of an economy. Another reason is the famous herd tendency. Like ordinary people, experts don't like to feel alone. They want reinforcement. And where do they find it? In the company of their peers—no matter that their peers are as confused as they. There's certainty in numbers. That explains the great Holland tulip-bulb mania of the 17th century and the great growth-stock mania of the early 1970s.

If the experts can't beat the market, what hope for the ordinary investor? Plenty, says Dreman. Play against them. How do you do that? By putting your money in stocks the so-called smart money shuns—stocks with low price/earnings ratios. Aren't there reasons for their low prices? Yes, but the reasons are probably wrong or overestimated or about to change.

There are two key phrases in Dreman's philosophy. One is "regression to the mean." Put simply, this says that very low or very high numbers will tend to move back toward middle ground. This, Dreman says, is why high-multiple growth-stock investing is a loser's game: You are paying a premium for extremely good results, which probably cannot last—regression to the mean. The opposite is true if you buy out-of-favor stocks; the chances are good that these low-multiple companies will, over time, improve their low profitability—again, regression to the mean.

The other key phrase is "the quagmire of visibility." By this Dreman means you'll get in trouble if you put too much store in your ability to predict the future. When you buy high-P/E stocks, you are assuming their future is highly visible. In fact, it is not. You are, therefore, paying a premium for an illusion.

By now the reader will have gotten the point: Buy low-price/earnings-ratio stocks. In chart after chart and table after table, Dreman makes the case that high-P/E stocks generally *underperform* the market while low-P/E stocks generally *outperform* it. Dreman does insert one judgmental factor: He specifies that the low-P/E stocks should be sound companies in good financial condition.

Does all this sound familiar? Of course. It's Benjamin Graham updated. Graham preached value, buying sound assets cheap through the stock market. Graham knew that, even though such companies might have lean years, their earnings would almost certainly come back. Regression to the mean, Dreman calls this. Dreman has restated Graham in terms of modern psychology and modern computer technology.

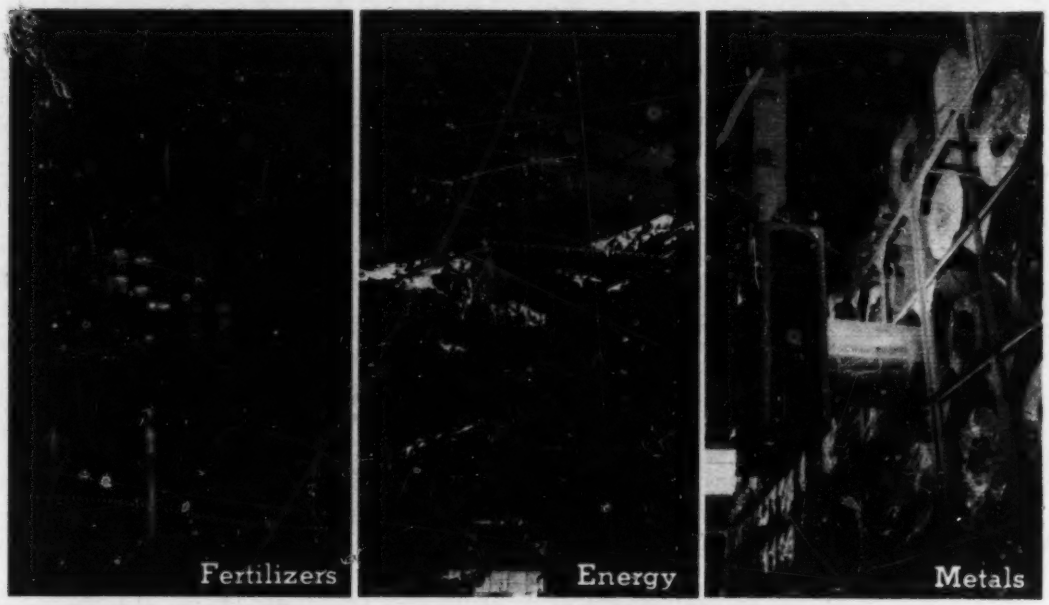
The test of any theory is its utility. Dreman is willing to subject his theories to the test. At FORBES' request he suggested we run a list of stocks whose price/earnings ratios based on the latest reported 12-months' earnings are in the lowest 20%. This is a strictly mechanical approach and over a three-year period, says Dreman, should produce superior results.

Will his list top the averages? Tune in in three years. ■

Dreman's basement bargains

FORBES fed David Dreman's low price/earnings ratio criteria into a computer, which promptly kicked out the following stocks as meeting them. The symbol (*) signals a change from a loss in 1977 to a profit in 1978.

Company	Price/ earnings ratio	Indicated yield	Payout ratio	Current ratio	Aftertax profit margin	Return on book value	Long-term debt as % of capital	EPS change 1977-78	Recent price	EPS latest 12 months
Wheeling-Pittsburgh Steel	1.2	—	—	1.7	1.64%	17.83%	35%	–154%*	18¼	$14.09
LTV	2.0	—	—	1.6	.50	180.95	97	–128*	7¾	3.80
White Motor	2.1	—	—	1.3	.03	9.20	27	–105	5	2.28
Avco	2.5	5.6%	14%	—	6.81	22.99	80	14	21⅜	8.30
Revere Copper & Brass	2.7	—	—	2.5	3.11	19.20	61	109	12¼	4.52
McLouth Steel	2.7	—	—	1.4	1.59	9.42	41	–164*	8¼	2.95
American Motors	2.8	4.2	11	1.4	.93	22.37	11	700	7⅛	2.54
Republic Steel	2.8	9.8	27	1.9	3.19	10.65	21	170	26⅛	9.28
AO Smith	2.8	8.2	23	1.8	3.34	14.20	13	62	17	5.88
Cyclops	3.0	5.7	17	1.7	2.54	15.49	36	138	21¼	7.06
CNA Financial	3.0	—	—	—	6.05	27.75	46	131	12¾	4.23
Bethlehem Steel	3.1	7.2	22	1.7	3.63	13.23	28	–1326*	22⅛	7.13
Sheller-Globe	3.1	8.6	27	2.8	2.74	15.73	43	–3	8⅛	2.58



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We're worth watching in the '80s.

WILLIAMS

Dreman's basement bargains

Company	Price/ earnings ratio	Indicated yield	Payout ratio	Current ratio	After-tax profit margin	Return on book value	Long-term debt as % of capital	EPS change 1977-78	Recent price	EPS latest 12 months
Dayco	3.1	4.0%	12%	2.4	2.65%	23.70%	59%	17	13⅞	$ 4.41
Seaboard Coast Lines	3.1	8.5	27	1.0	3.55	9.93	48	–33	25¼	8.10
Borman's	3.1	4.6	14	1.1	.46	12.13	49	1311	4⅜	1.37
Allegheny Ludlum Industries	3.2	5.6	17	1.8	2.55	26.49	63	–16	22⅞	7.13
Gulf & Western Industries	3.2	5.0	16	1.7	4.30	20.08	63	21	14⅞	4.62
Fuqua Industries	3.2	3.2	10	1.7	1.81	44.25	67	31	13⅞	4.24
DPF	3.2	—	—	—	1.99	21.69	73	59	8	2.43
Asarco	3.3	6.0	20	1.5	4.21	24.30	20	–253	25⅛	7.44
US Air	3.3	—	—	1.1	3.96	17.24	51	8	6⅞	2.03
US Home	3.4	4.1	14	—	4.23	31.19	54	91	12⅝	3.70
Ford Motor	3.4	10.7	36	1.3	3.71	13.89	12	–5	37¼	10.90
Reynolds Metals	3.4	7.1	24	2.4	4.16	16.99	46	32	31⅛	8.93
Loews	3.4	2.1	7	—	5.19	28.10	61	41	56⅛	16.12
BF Goodrich	3.5	7.8	27	2.2	2.70	10.73	35	11	18⅜	5.23
GDV	3.5	—	—	1.6	3.52	24.38	69	68	9⅛	2.59
A-T-O	3.5	5.3	18	2.4	2.46	20.46	64	45	9	2.53
City Investing	3.6	6.6	24	1.7	2.96	23.15	75	36	18¼	4.96
Wallace-Murray	3.6	6.8	25	3.1	5.47	25.56	36	–2	23⅜	6.40
Rapid-American	3.7	3.5	13	2.5	1.51	—	100	53	17¼	4.59
Intl Harvester	3.7	6.9	25	1.6	2.80	15.79	29	–10	36⅛	9.63
Stop & Shop Cos	3.8	7.9	29	1.4	.90	13.73	59	34	15¼	4.01
Norfolk & Western Ry	3.8	8.5	32	1.3	10.20	14.83	28	8	22½	5.83
Royal Dutch Petroleum	3.8	7.3	28	1.4	5.48	—	100	–10	75⅛	19.65
Kaiser Aluminum & Chem	3.8	6.3	24	1.6	5.90	20.58	43	29	19	4.96
Springs Mills	3.8	7.9	30	3.6	4.04	10.98	15	65	15⅛	3.93
EF Hutton Group	3.8	4.6	17	—	5.41	20.49	28	50	17⅜	4.52
Fruehauf	3.8	8.6	33	1.5	3.41	18.80	43	24	27⅞	7.20

Rexnord...

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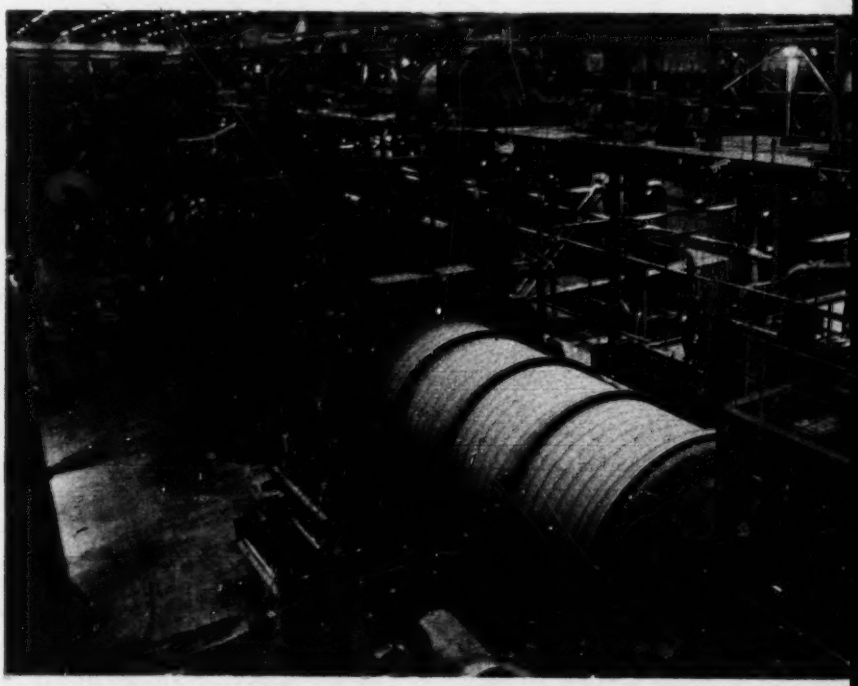

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Rexnord products are used in many industries—from chemicals and food processing to farm machinery and pollution control.

Company	Price/ earnings ratio	Indicated yield	Payout ratio	Current ratio	Aftertax profit margin	Return on book value	Long-term debt as % of capital	EPS change 1977-78	Recent price	EPS latest 12 months
Western Air Lines	3.8	4.9%	19%	1.0	4.61%	15.96%	63%	193%	8¼	$ 2.09
National Gypsum	3.9	7.9	31	3.7	6.42	19.52	25	58	18¾	4.77
United Merchants/Mfr	3.9	—	—	2.9	1.52	21.05	78	–104*	7⅛	1.80
Raymond Intl	3.9	7.5	29	1.2	3.02	21.51	33	–17	13⅜	3.38
Zayre	3.9	—	—	1.6	1.00	10.54	60	24	11	2.77
Southwest Forest Industries	3.9	2.7	10	2.1	3.49	13.85	58	44	14¼	3.69
Bangor Punta	3.9	3.6	14	2.6	3.65	40.73	73	30	22½	5.63
Travelers	4.0	6.0	24	—	5.08	17.98	3	42	34⅝	8.64
Paine Webber	4.0	4.9	19	—	2.72	18.65	51	25	9	2.24
Crocker National	4.0	7.4	29	—	6.54	20.16	34	36	27⅛	6.72
Aluminum Co of America	4.0	5.3	21	2.2	7.51	22.40	33	50	52¼	13.08
Lear Siegler	4.0	5.5	22	2.3	4.76	38.31	41	31	18¼	4.59
Chessie System	4.0	9.1	37	.9	4.38	10.01	44	–10	25⅝	6.21
Chemical New York	4.0	8.8	36	—	5.13	12.92	38	11	35¼	8.76
Alcan Aluminium Ltd	4.0	6.5	26	2.2	8.14	22.21	30	43	37⅛	9.07
HF Ahmanson	4.0	5.7	23	—	11.46	16.38	67	12	21	5.13
JP Stevens	4.1	8.6	35	3.2	2.20	8.96	35	3	13⅞	3.38
National Steel	4.1	8.5	34	1.7	2.99	10.62	32	87	30½	7.43
US Gypsum	4.1	7.6	31	2.1	7.80	24.78	20	86	31½	7.66
Owens-Illinois	4.1	7.0	28	1.7	3.51	12.00	41	20	18⅛	4.39
Dillingham	4.1	5.3	21	1.5	1.52	17.56	44	108	11⅜	2.75
Memorex	4.1	—	—	2.0	6.62	27.14	53	7	21⅞	5.26
Cummins Engine	4.1	6.2	25	1.8	4.23	13.44	28	–7	29⅛	6.98
Celanese	4.1	7.6	31	1.8	4.29	17.11	37	61	42	10.03
Eastern Air Lines	4.1	—	—	1.0	2.82	9.28	72	110	6⅛	1.46
Charter	4.2	1.5	6	.9	1.16	165.76	67	24	41⅜	9.83
Inland Steel	4.2	9.4	39	1.7	4.87	12.79	35	79	31¼	7.42
Cone Mills	4.2	6.0	25	3.6	5.82	16.29	9	–8	30	7.12

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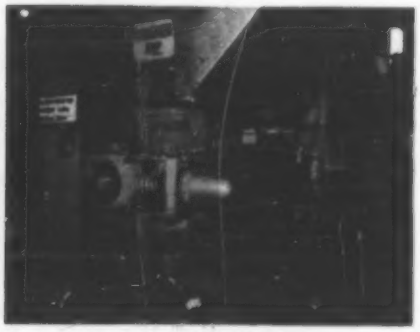

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For more information, read our corporate brochure and the Rexnord annual report. For copies, write W. C. Messinger, Chairman, Rexnord Inc., P.O. Box 2022, Milwaukee, Wisconsin 53201.

Rexnord

Dreman's basement bargains

Company	Price/ earnings ratio	Indicated yield	Payout ratio	Current ratio	Aftertax profit margin	Return on book value	Long-term debt as % of capital	EPS change 1977-78	Recent price	EPS latest 12 months
Chase Manhattan	4.2	6.7%	28%	—	4.42%	14.96%	34%	50%	36	$ 8.50
SCM	4.2	5.7	24	2.3	2.69	13.69	38	—	22⅞	5.37
Amerada Hess	4.2	3.5	14	1.2	3.02	30.92	34	–20	40⅜	9.46
General Public Utilities	4.2	12.3	52	.8	10.46	8.73	61	–8	8⅛	1.90
National Can	4.2	3.7	15	1.9	2.03	17.64	42	–16	19½	4.54
Irving Bank Corp	4.3	7.5	32	—	6.17	14.38	34	20	32⅜	7.57
First Natl Boston	4.3	7.8	33	—	5.54	13.50	38	32	28⅛	6.48
El Paso	4.3	6.8	29	1.3	5.20	28.84	67	5	19½	4.46
Interlake	4.3	8.6	37	1.7	1.98	11.70	30	–2	25½	5.81
Consol Freightways	4.4	5.7	24	1.2	4.47	26.08	30	13	23	5.21
Collins & Aikman	4.4	9.1	40	2.2	4.16	11.99	12	4	7⅞	1.77
Dan River	4.4	6.1	27	3.6	2.52	12.88	33	21	16½	3.70
Hart Schaffner & Marx	4.4	8.5	37	3.9	2.96	10.04	20	16	10⅜	2.32
Wickes	4.4	7.0	31	1.8	1.79	15.67	52	26	14⅞	3.31
First Chicago	4.4	8.1	36	1.7	6.87	11.76	21	17	14⅞	3.31
American Airlines	4.5	4.1	18	1.2	4.91	9.41	64	99	9¼	2.16
Sperry & Hutchinson	4.5	6.5	29	1.2	3.81	19.66	22	37	15⅜	3.40
Hammermill Paper	4.5	7.6	34	2.6	2.85	12.02	41	33	18⅜	4.06
Aetna Life & Casualty	4.5	5.7	25	—	5.47	22.98	18	23	31½	6.96
US Shoe	4.5	7.8	35	1.9	3.51	17.94	29	38	18⅞	4.16
US Fidelity & Guaranty	4.5	6.7	30	—	10.96	27.38	—	32	35⅞	7.91
Bankers Trust NY	4.5	8.4	38	—	4.29	13.01	30	30	39⅛	8.62
Teledyne	4.5	—	—	1.8	10.17	46.19	24	29	123½	27.09
Lone Star Industries	4.5	6.0	27	2.1	4.15	17.60	38	51	23¼	5.09
General Motors	4.6	8.2	38	1.6	5.54	19.58	4	5	55⅞	12.09
Gamble-Skogmo	4.6	6.1	28	1.5	1.18	11.20	68	168	24¼	5.35
Mead	4.6	7.2	33	1.5	5.20	20.36	38	24	25⅛	5.42

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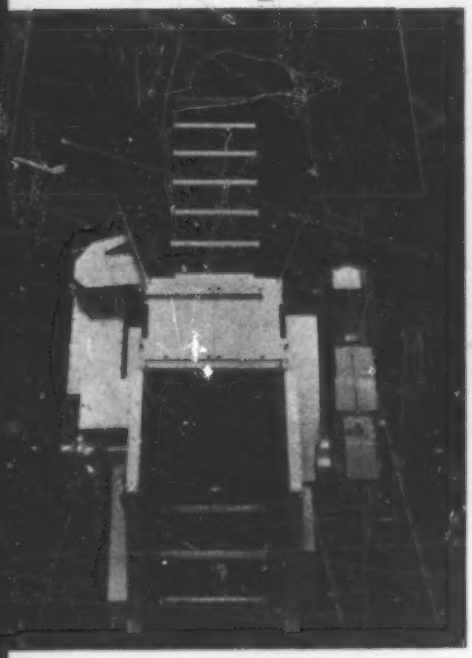
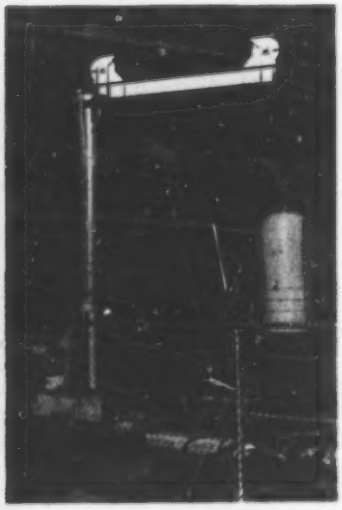
Company	Price/ earnings ratio	Indicated yield	Payout ratio	Current ratio	Aftertax profit margin	Return on book value	Long-term debt as % of capital	EPS change 1977-78	Recent price	EPS latest 12 months
PPG Industries	4.6	6.5%	30%	2.3	6.48%	18.31%	31%	15	30⅞	$ 6.65
Scott Paper	4.6	5.5	25	1.2	5.42	15.17	32	50	16¾	3.58
INA	4.6	6.9	32	—	5.00	19.06	25	26	42⅜	9.25
Continental	4.6	8.0	37	—	9.91	17.91	11	20	25	5.34
Security Pacific	4.7	6.6	31	—	7.55	17.22	25	31	27¼	5.79
Colonial Penn Group	4.7	6.7	31	—	10.30	24.00	—	16	20⅞	4.44
Borg Warner	4.7	6.9	32	1.9	5.75	15.53	14	26	33⅜	7.09
Union Carbide	4.7	7.7	36	1.9	5.01	14.40	31	—	39⅛	8.29
National Detroit	4.7	6.3	29	—	11.60	14.67	11	28	31¼	6.74
Eaton	4.7	6.6	31	2.1	4.28	19.96	46	12	26	5.52
Crum & Forster	4.7	5.1	24	—	8.23	25.15	2	43	49	10.40
Amfac	4.7	5.6	26	2.1	2.82	16.87	50	184	21⅜	4.53
Reliance Group	4.7	4.3	20	—	8.06	43.09	72	38	46¼	9.76
Nashua	4.7	5.7	26	1.9	4.46	23.76	30	48	26½	5.60
Walter Kidde	4.7	4.5	21	2.6	3.65	20.26	50	19	35½	7.48
Transway Intl	4.7	8.0	38	1.7	3.40	19.44	20	6	22⅜	4.69
Armco	4.7	6.2	29	2.1	4.55	15.74	29	69	24¼	5.09
Wells Fargo	4.7	6.4	30	—	7.78	17.09	39	20	26⅞	5.63
Libbey-Owens-Ford	4.7	9.1	43	3.0	5.41	16.89	27	1	25⅞	5.42
North Amer Philips	4.7	6.4	29	2.6	3.11	14.69	24	10	27¼	5.80
Brown Group	4.7	8.0	38	2.9	3.40	15.56	26	22	25	5.23
Occidental Petroleum	4.7	5.2	24	1.0	.10	48.42	56	–120	24¼	5.06
Johns-Manville	4.7	8.4	40	1.8	7.37	12.46	39	17	22⅞	4.77
Manufacturers Hanover	4.8	7.5	36	—	6.92	14.56	35	8	30¼	6.25
Ball	4.8	6.1	29	2.0	3.62	16.65	41	13	22⅞	4.71
Hoover Universal	4.8	7.1	34	2.3	5.23	26.09	39	21	17⅜	3.57
First Charter Financial	4.8	5.1	24	—	14.77	13.35	54	8	15⅝	3.21
Ogden	4.8	6.3	30	1.5	2.96	18.97	55	17	31¼	6.51

industry increase productivity.





Rexnord produces a broad line of components and machines for both underground and open pit operations.

Rexnord equipment is engineered and built to operate with great reliability. At the same time, it is designed to produce maximum productivity and return on investment.

Rexnord products serve a wide range of industry, including forest products, construction, quarrying and more.

For more information, read our corporate brochure and our annual report. Write W. C. Messinger, Chairman, Rexnord Inc., P.O. Box 2022, Milwaukee, WI 53201.

Nordberg escape hoist systems provide designed-in dependability.

Rex chains deliver reliable performance on this feeder breaker machine.

Rexnord

It's not easy being a public utility these days—or one of its stockholders. If you are yield-shopping, you must dig deeper than before.

Statistical Spotlight

Risks that come with 12%

IT'S NO SURPRISE to find some electric utilities yielding 12% or even more these days. As their troubles with rate commissions, pollution laws and fuel prices have mounted, so have yields all through the industry. How solid those dividends are now, however, is another matter. Ohio Edison, for example, generated only enough cash internally last year to cover two-thirds of its common dividend of $1.76 per share. Its reported 1978 earnings of $1.19 per share included substantial noncash credits like allowances for funds used during construction (AFDC) and investment tax credits. It paid the balance of the dividend with borrowed money. That sort of thing cannot be counted on to continue indefinitely.

The table below lays out some of the major considerations affecting the safety and growth prospects for substantially all U.S. investor-owned electric utilities. Data were supplied largely by Dillon, Read & Co. and by Salomon Brothers.

The data lead off with Wall Street's judgment, graded on a scale of A+ (most favorable) to E- (least favorable), of the regulators each utility must deal with. These companies are as healthy as the revenues these regulators allow them to take in. Look at that a lot.

Next, look at the rating of the weakest preferred stock in the company's capital structure and note how well all such fixed charges—interest and preferred dividends—are covered by pretax profits. As calculated here, coverage *excludes* allowances for funds used during construction (AFDC), the most important noncash item in many utility income statements. Also, when comparing a utility's common dividend to its per-share earnings, keep an eye on AFDC's impact; it does allow the utility to include unfinished plants in its rate base, but you can't get paid directly out of a bookkeeping convention. Pay attention to how oil- and gas-dependent the utility is, bearing in mind, at the same time, its location. Big bills for OPEC oil combined with hostile regulators could be very bad news, but burning Texas oil in Texas might not be so bad (for nuclear dependence, see FORBES, *May 28*).

Consider the company's capital spending plans. This number constantly fluctuates, but it does give at least a rough measure of another claim on cash that comes ahead of the stockholder.

There are still other concerns, more than can possibly be dealt with in a table such as this one—for example, population growth and industrial versus residential load. But those below are some of the essentials. ■

Metering the utilities

Company	Regulatory rating (consensus)	Lowest-rated preferred (S&P's)	Fixed-charge coverage (pretax)	AFDC as % of net income	Oil & gas % total fuel, 1981	3-year construction budget (est per share)	Latest 12-month EPS	Indicated dividend	Recent price	Indicated yield
Allegheny Power	C-	A-	1.61*	50%	—	$25	$2.31	$1.76	14½	12.1%
American Electric Power	C-	BBB-	1.43*	40	1%	20	2.24	2.22	18½	12.0
Arizona Public Service	B	A-	1.71	36	14	35	2.74	2.00	18	11.1
Atlantic City Electric	B	BBB+	2.11	18	36	26	2.41	1.84	17⅝	10.4
Baltimore Gas & Electric	C	AA-	2.26	6	19	26	3.51	2.44	21⅝	11.3
Boston Edison	E	BB	1.51	35	64	41	3.51	2.44	20¼	12.0
Carolina Power & Light	B-	BBB	1.96	47	—	59	3.06	2.08	18⅞	11.0
Central & South West	B	AA	2.83*	28	64	28	2.28	1.42	13⅜	10.6
Central Hudson Gas & Electric	D	A-	1.94	25	96	25	3.09	2.08	18⅝	11.2
Central Illinois Light	C	A	1.97	7	—	33	2.39	1.70	14⅞	11.4
Central Illinois Public Service	C	AA	2.03	21	3	20	1.96	1.36	12⅜	11.0
Cincinnati Gas & Electric	C	A	1.88	29	1	24	2.67	1.96	16⅞	11.6
Cleveland Electric Illuminating	C	A	1.50	41	4	26	2.36	1.92	15⅞	12.1
Columbus & So Ohio Electric	C	BBB	1.10	51	1	20	2.60	2.32	20⅞	11.1
Commonwealth Edison	C	A-	1.59	50	10	37	2.99	2.60	21¼	12.2
Consolidated Edison	D	BBB	2.54	3	63	18	4.29	2.44	22¼	11.0
Consumers Power	D	BBB-	1.45	44	18	31	3.49	2.36	18⅞	12.5
Dayton Power & Light	C	BBB	1.46	46	1	25	1.94	1.74	14¾	11.8
Delmarva Power & Light	C	A	2.00	23	26	14	1.85	1.38	11¾	11.7
Detroit Edison	D	BB	1.42	45	10	29	1.97	1.60	13	12.3
Duke Power	B-	BBB	1.63	53	—	31	2.85	1.80	16⅞	10.7
Duquesne Light	C	BBB+	1.50	32	—	15	1.68	1.80	14	12.9
Florida Power	B	A	2.78	1	52	66	3.84	2.76	26½	10.4
Florida Power & Light	B	A+	2.57	16	72	50	4.06	2.40	24¼	9.7
General Public Utilities	C	BBB-	1.59*	52	NA	NA	1.90	1.00	8	12.5

*Composite based on figures for operating subsidiaries of parent company. NA: not available. NM: not meaningful.
Source: Dillon Read & Co.'s electric utility industry financial summary; Salomon Brothers.

Container Corporation of America

Nobel Prize acceptance speech Stockholm December 1950 Great Ideas Artist/Jerry Uelsman

I believe that man will not merely endure

he will prevail

He is immortal

not because he alone among creatures has an inexhaustible voice

but because he has a soul

a spirit capable of compassion

and sacrifice and endurance

William Faulkner

For 11" x 14" reprint write:
Container Corporation of America
Communication Dept. FNS-187
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Chicago, Illinois 60603

Finding new ways to help

Lockheed knows how.

Taking power from the oceans.

The first sea-based generating plant fueled by the warm and cold waters of the ocean is now producing electricity off the island of Hawaii.

Barge-mounted, it is a small-scale version of the free-fuel concept called Ocean Thermal Energy Conversion (OTEC). Basically, the principle uses a flow of warm surface waters and cold deep waters to drive a heat-exchanging engine, which in turn powers electric generators.

The small Hawaiian OTEC installation, for which Lockheed has major responsibility, produces only about 50 kilowatts. But it foretells huge OTEC platforms, each producing enough power for an onshore population of 100,000. In groups, the floating plants could generate all the electricity for major cities, using only the free ocean waters as fuel.

A proposed giant OTEC plant.

Harnessing the wind.

Atop a 100-foot steel tower in Clayton, New Mexico, two giant Lockheed-built blades are being wind-driven to furnish about 15% of the town's electric power.

The 60-foot-long blades are connected to a 200-kilowatt generator and rotate when the wind exceeds about 12 miles per hour, which it does most of the time.

A joint project of the Department of Energy and NASA, the Clayton wind turbine was the first of such installations. A second is now at work on Culebra Island, Puerto Rico, and a third will be operating on Block Island, off Rhode Island, this year.

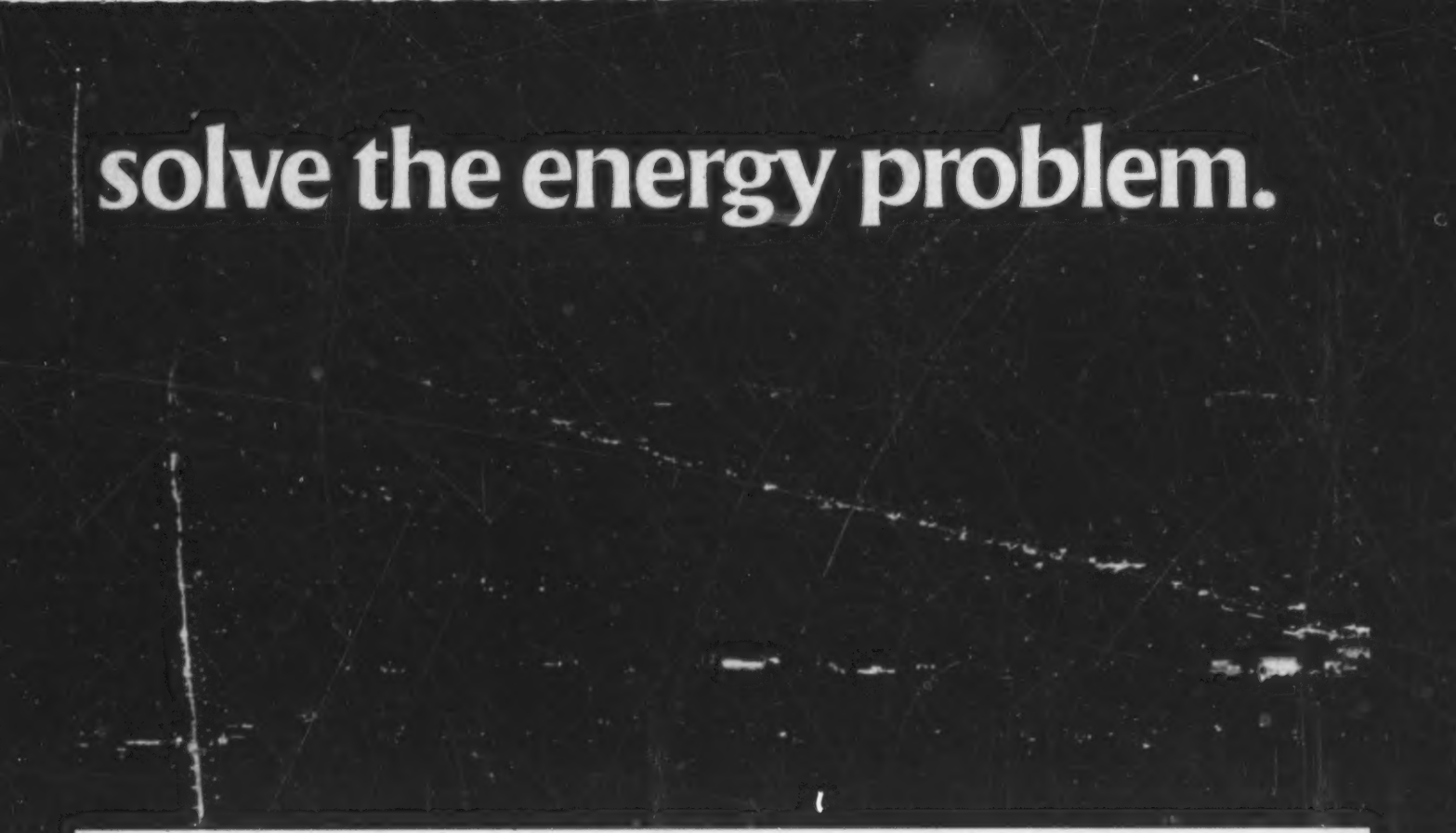
Wind-harnessing is a fast-growing activity. And experts estimate that, by the year 2000, wind turbines could supply as much as 10% of the nation's electric energy.

Polishing up a power plant.

That future outer-space missions will demand huge amounts of electrical power is certain. So Lockheed is readying a large-scale, photovoltaic generating plant for its first test flight on board NASA's Space Shuttle in the early 1980s.

The project is being developed for Marshall Space Flight

solve the energy problem.



Center. In final operating form, it will be a giant, foldable, winglike array—13½ feet wide by 105 feet long—paved with 41 modules of tightly packed solar cells that convert the sun's energy into a hefty 12½ kilowatts of power.

The great, single array—largest ever in size and specific power output—may foreshadow large orbiting stations that transmit electric power from space to Earth.

It incorporates astonishing engineering. Its large but

lightweight mass, positioned by a telescoping mast, folds into a spacecraft storage area 13½ feet long, only 2½ feet wide, and a mere 5 inches deep!

Making jetliners more fuel-efficient.

Now in many L-1011 TriStars is an exclusive fuel-saving system that's been called "the most significant advance since the autopilot."

This computer-controlled Lockheed Flight Management System automatically calculates altitude, speed and other factors. Then it acts physically, without

Control panel for Flight Management System.

pilot attention, to control engine throttles for optimum fuel-use efficiency throughout flight.

The system isn't just for new L-1011s. It can easily be retrofitted into existing planes as well.

And the savings? Big. They could total millions of dollars over the life of each L-1011 TriStar.

Working to keep up our energy.

Lockheed scientists and engineers are hard at work on other energy projects.

They're investigating advanced fuel-cell power systems. They're studying ways to make liquid hydrogen the fuel for future hypersonic aircraft. And they're constantly looking at new applications concepts for solar energy.

When it comes to solving complex problems by using advanced technologies, Lockheed knows how.

Lockheed

Metering the utilities

Company	Regulatory rating (consensus)	Lowest-rated preferred (S&P's)	Fixed-charge coverage (pretax)	AFDC as % of net income	Oil & gas % total fuel, 1981	3-year construction budget (est per share)	Latest 12-month EPS	Indicated dividend	Recent price	Indicated yield
Gulf States Utilities	C-	A	1.77	46%	100%	$29	$1.63	$1.36	11⅛	12.0%
Hawaiian Electric	C	A	2.39	8	97	40	3.72	2.44	24¼	10.1
Houston Industries	A-	AA	2.49*	21	81	79	4.90	2.36	26½	8.9
Idaho Power	D	A	1.75	26	—	34	2.32	2.40	22⅛	10.8
Illinois Power	C	AA	1.97	35	5	31	2.64	2.28	18⅞	12.1
Indianapolis Power & Light	A	A+	2.23	6	1	21	3.53	2.12	21⅜	9.9
Interstate Power	C-	BBB	1.66	27	4	14	1.98	1.50	13¼	11.3
Iowa Electric Light & Power	C-	BBB	1.91	16	—	29	2.12	1.50	13	11.5
Iowa-Illinois Gas & Electric	C-	A	1.91	36	4	48	2.92	2.00	17⅜	11.5
Iowa Power & Light	D	A	1.73	39	2	39	3.39	2.52	21⅝	11.7
Iowa Public Service	D	A+	1.67	47	1	28	3.87	2.04	20	10.2
Kansas City Power & Light	D	A	1.67	54	4	35	3.36	2.66	22¾	11.7
Kansas Gas & Electric	C	BBB	1.54	54	43	39	1.58	1.90	15¼	12.5
Kansas Power & Light	C	AA-	1.86	56	27	43	2.79	1.96	16⅝	11.8
Kentucky Utilities	C+	A	1.85	2	—	53	2.86	2.04	18⅞	10.8
Long Island Lighting	C-	BBB	1.42	49	67	20	2.46	1.78	14⅞	12.0
Louisville Gas & Electric	B-	AA-	2.02	NA	—	42	2.27	2.06	18⅜	11.2
Middle South Utilities	D	BB	1.64*	80	78	33	2.39	1.52	13	11.7
Minnesota Power & Light	C+	A-	1.79	22	1	29	3.93	1.94	18⅝	10.4
Montana-Dakota Utilities	D	BBB	2.59	12	1	27	2.69	1.80	17	10.6
Montana Power	E	BBB+	1.96	8	2	47	2.59	2.04	19⅜	10.5
Nevada Power	C	BB	1.62	6	11	36	3.83	2.12	24⅛	8.8
New England Electric	C	A	2.20*	25	NA	31	3.56	2.24	19⅞	11.3
New York State Electric & Gas	D	BBB	1.65	24	—	33	2.63	1.76	15½	11.4
Niagara Mohawk Power	D	BBB	1.62	32	39	15	2.03	1.44	12⅜	11.6
Northeast Utilities	D	BBB	1.51*	43	47	7	1.32	1.10	9	12.2
Northern Indiana Public Service	A	A	1.61	41	3	34	1.90	1.50	13⅝	11.0
Northern States Power	C+	AA	3.00	[illegible]	3	30	3.52	2.28	21⅜	10.7
Ohio Edison	C	BBB	0.95	66	2	27	1.56	1.76	14⅛	12.5
Oklahoma Gas & Electric	B-	AA-	1.79	46	51	18	1.27	1.60	14⅛	11.3
Orange & Rockland Utilities	C	BBB	2.23	11	95	10	2.12	1.56	12⅞	12.1
Pacific Gas & Electric	D	A	1.64	36	35	30	3.81	2.44	21⅞	11.2
Pacific Power & Light	C-	BBB	1.72	27	—	38	2.40	1.92	17⅜	11.1
Pennsylvania Power & Light	C	BBB	1.48	48	14	39	3.37	2.04	17¾	11.5
Philadelphia Electric	C	BBB	1.42	49	23	18	1.92	1.80	14½	12.4
Portland General Electric	C	BB	1.09	59	1	25	1.43	1.70	14⅛	12.0
Potomac Electric Power	C	A	2.37	NM	30	13	1.68	1.40	11⅞	11.8
Public Service Electric & Gas	B	A+	2.20	18	24	32	3.02	2.20	18⅜	12.0
Public Service of Colorado	C	A+	1.70	29	7	31	1.40	1.60	13⅜	12.0
Public Service of Indiana	A	AA	2.14	40	1	53	3.75	2.32	22¾	10.2
Public Service of New Hampshire	C	BBB	1.79	43	53	20	2.88	2.12	15⅜	13.8
Public Service of New Mexico	B	A	1.72	41	25	57	2.55	1.92	18⅝	10.3
Puget Sound Power & Light	D+	BBB	1.63	25	2	48	1.83	1.64	13¾	11.9
Rochester Gas & Electric	C	A	1.74	34	1	25	2.36	1.48	14⅞	9.9
San Diego Gas & Electric	D	BBB	1.41	33	75	21	1.63	1.52	13⅜	11.4
Sierra Pacific Power	C	BBB	1.96	24	36	29	1.95	1.34	12¼	10.9
South Carolina Electric & Gas	C	A	1.67	48	15	19	1.84	1.68	14⅞	11.3
Southern California Edison	D	A	1.92	8	59	35	4.56	2.72	23⅞	11.4
Southern Company	D	BB	1.47*	75	8	32	1.36	1.54	12	12.8
Southwestern Public Service	B+	AA	2.24	16	55	17	1.50	1.28	11⅝	11.0
Tampa Electric	B	AA	3.01	4	20	10	2.20	1.44	16⅛	8.9
Texas Utilities	A	AA	2.39*	27	40	24	2.51	1.64	17½	9.4
Toledo Edison	C	BBB	1.54	45	—	32	2.83	2.20	18⅜	12.0
Tucson Electric Power	B	A	1.47	42	26	18	2.06	1.42	14⅛	10.1
Union Electric	D	BBB	2.01	26	—	26	1.76	1.44	12	12.0
Utah Power & Light	B	AA-	1.88	21	2	23	1.97	1.76	16⅞	10.4
Virginia Electric & Power	C	BBB	1.41	46	23	30	1.70	1.40	10⅞	12.9
Washington Water Power	D	A-	2.42	14	—	34	2.68	2.08	19⅞	10.5
Wisconsin Electric Power	B	AA	2.89	7	3	45	3.78	2.38	23⅝	10.1
Wisconsin Power & Light	B	AA	2.49	2	1	24	2.53	1.84	17⅞	10.3
Wisconsin Public Service	B	AA	3.35	—	1	36	2.86	1.72	17¼	10.0

*Composite based on figures for operating subsidiaries of parent company. NA: not available. NM: not meaningful.
Source: Dillon Read & Co.'s electric utility industry financial summary; Salomon Brothers.